

CHEATGRASS **Bromus tectorum**

Life History/Identification:

Cheatgrass, also known as downy brome, is an erect winter or spring annual grass that can grow to a height of two feet. (60 cm.) When environmental conditions are poor and/or when grazing animals crop the plants, cheatgrass plants reach heights of just two to four inches (5-10 cm.). These smaller plants can still flower, however, and produce viable seed. Cheatgrass normally germinates in the fall, but if moisture is inadequate, seeds may germinate in the spring. After germination the plant develops a finely divided, fibrous root system that may reach a depth of twelve inches into the soil, allowing the plant to extract most or all of the available moisture. The roots continue to grow during the winter, which allows it to gain control of a site before the seedlings of other species are established. The stems of the plant are erect, slender, and may be slightly hairy. The nodding, open panicles with moderately awned spikelets are very distinctive. Panicles are between two and eight inches long and are rather dense. Cheatgrass panicles change color from green to purple to brown as the plant matures and eventually dries out. Spikelets are about two inches long, nodding, and can readily penetrate fur, socks, and pants. Cheatgrass is a primarily self-pollinating species and hybridization with other species rarely occurs under natural conditions. The plant is a prolific seed producer and plant density is not directly related to the number of seeds present, but to the number of available sites in the seedbed capable of supporting germination. The largest infestations of cheatgrass are usually found in disturbed areas, overgrazed rangeland, abandoned fields, eroded areas, sand dunes, roadsides, and waste areas.



Flagstaff Localities:

Cheatgrass can be found in many locations the Flagstaff area. For example, a recent study has shown that on White Mesa in the Wet Beaver Wilderness the herbaceous layer is totally dominated by cheatgrass. In forested regions that have been disturbed by logging or by wildfires, the plant has aggressively established infestations. Infestations can be found in fields, vacant lots and along roadways in the urban interface. Ample sunlight, adequate precipitation and increasing areas of burned and disturbed lands make the ecosystems of Northern Arizona prime targets for continued cheatgrass invasion.

Origin & Impact:

Cheatgrass is a native of Eurasia and the Mediterranean, and it is thought that the plant was introduced into the United States via contaminated seed. By the 1920's cheatgrass had become a serious problem in fields of alfalfa and wheat, and references soon began to be made about "cheatgrass lands". Presently, this invasive species is widely distributed throughout the contiguous United States, and has become the dominant species on more than 100 million acres of

land. Annually, cheatgrass costs wheat farmers an estimated 350 million dollars in lost yields and in control costs. The adoption of no-till farming practices has actually favored the growth and spread of the plant. Cheatgrass is a serious problem in winter wheat crops because its hardiness is either equal to or superior to the hardiest winter wheat cultivars. At certain densities, the weed can reduce winter wheat yields by up to ninety percent. In sensitive ecological regions such as Northern Arizona, cheatgrass competes with native plants and can change the soil chemistry of an area, thereby reducing the populations of native plants. The plant is a poor nutritional substitute for native plants and can impact forage quality for grazing animals.

Cheatgrass has changed the natural fire regime and impacted native ecosystems. In sagebrush steppe habitat in the intermountain west, fire frequency has increased. The natural historical fire frequency was thought to have been 60 to 100 years or more. Fires now occur every three to five years. This impacts native plant species such as sagebrush, which are not adapted to fire. This results in replacement of the natural sagebrush steppe habitat with large areas of cheatgrass. Exotic grasses also affect the fire regime in desert ecosystems where the native plants such as cacti are not adapted to fire. The life cycle of cheatgrass creates a scenario for larger, more frequent fires. The species is a winter or early spring annual and completes its life cycle by early summer. The result is large areas of tinder dry plants in areas where the potential for fire is the greatest in the early summer. This often results in large grass fires that can become dangerous and expensive to suppress.

Control:

Since cheatgrass reproduces entirely by seed, the key to controlling existing infestations is to eliminate new seed production and deplete the existing seed bank. Lasting control of the weed will require a combination of chemical, mechanical, and cultural control over a long period of time. Even with the elimination of the current year's seed production, the seed bank is capable of renewing cheatgrass populations for two or three years without noticeable reductions in plant density. However, the cumulative stress of long-term control methods can eventually reduce its ability to flourish and spread.

Cultural Control:

Areas that have been cleared of cheatgrass should be reseeded with native perennial plants to enhance the recovery of the site. Even though cheatgrass uses soil water efficiently at shallow depths compared to perennial grasses, once the root of a perennial grass penetrates below 20 inches, it is relatively free from competition with cheatgrass. Areas that are contaminated with the weed should be monitored every spring, and special attention should be paid to roadsides and other disturbed areas where cheatgrass is commonly found. Extreme caution should be used when leaving an infested area. Clothing, pets, personal gear and vehicles should be inspected to avoid spreading seeds or plant parts from the infested area to new areas.

Mechanical Control:

Cutting is not a recommended control method for cheatgrass. Plants that are cut before their seed ripen will regenerate new culms and produce seeds at the cut height. Plants that are cut after seed ripening will die, but by this point the seeds are already viable. Grazing is not recommended for the same reasons as cutting. Burning will be ineffective if perennial plant seeds are not planted after the fire. This species is better suited to handle fire than perennial grasses and, if not properly done, burning could enhance cheatgrass dominance.

Chemical Control *(Noted here are chemical control techniques that have been used in other areas. Always check with weed specialists and chemical suppliers before treatment to ensure correct dosage and application. Mention of these products does not imply endorsement by the Northern Arizona Weed Council or The Nature Conservancy.)*

- 1) In one study, Assure II™ (chemical name: quizalofop) applied in mid-spring at a rate of 0.5 pounds per acre controlled 100% of the cheatgrass. However, the herbicide suppressed seed head production of perennial grasses as well.

- 2) When applied during late April or early May, Gramaxone™ (chemical name: paraquat) at 0.5 to 0.7 pounds per acre controlled greater than 97% of cheatgrass. Gramaxone™ is a contact herbicide that kills only the tissue contacted.
- 3) Roundup™ (chemical name: glyphosate) is effective at 0.16 to 0.18 pounds per acre. This compound is a non-selective herbicide that will damage or kill desirable vegetation that it contacts including forbs and woody species.
- 4) Oust™ (chemical name: sulfometuron methyl) at three to five ounces per acre is effective.

Biological Control *(No exotic species should be introduced into an ecosystem without extensive research into the long-term effects. Mention of the species below does not imply appropriateness for use in Northern Arizona.):*

Currently, there are no biological control agents available for use against cheatgrass.

Note: No single control method, or any one-year treatment program, will ever achieve effective control of an area contaminated with cheatgrass. The fast growth, high seed viability, fast rate of spread, and long seed dormancy of this plant require long-term cooperative integrated management programs and planning to prevent, contain, and reduce cheatgrass infestations.

Moser, L; D. Crisp. San Francisco Peaks Weed Management Area fact sheet on Bromus tectorum. Coconino National Forest.